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INDIVIDUALIZED LEARNING THROUGH COMPUTERIZED MODULAR SCHEDULING. SECOND REPORT OF SCHEDULING PROJECT AT VIRGIN VALLEY HIGH SCHOOL, MESQUITE, NEVADA.

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In 1963 Stanford University selected Virgin Valley High School in southern Nevada as one of four pilot schools to use computerized modular scheduling. Schedules for 165 students and assignments for 14 teachers were developed at the Stanford University Computer Computation Center using 30-minute modules with a total of 80 modules per week. After one year of operation, it was found that greater opportunity existed for individualized instruction, curriculum offerings were increased, release time for teacher preparation resulted, and student and teacher attitudes toward learning improved. Reactions and responses from students and teachers concerning the use of flexible scheduling are quoted in the document. A related document is RC 001 137. (JH)

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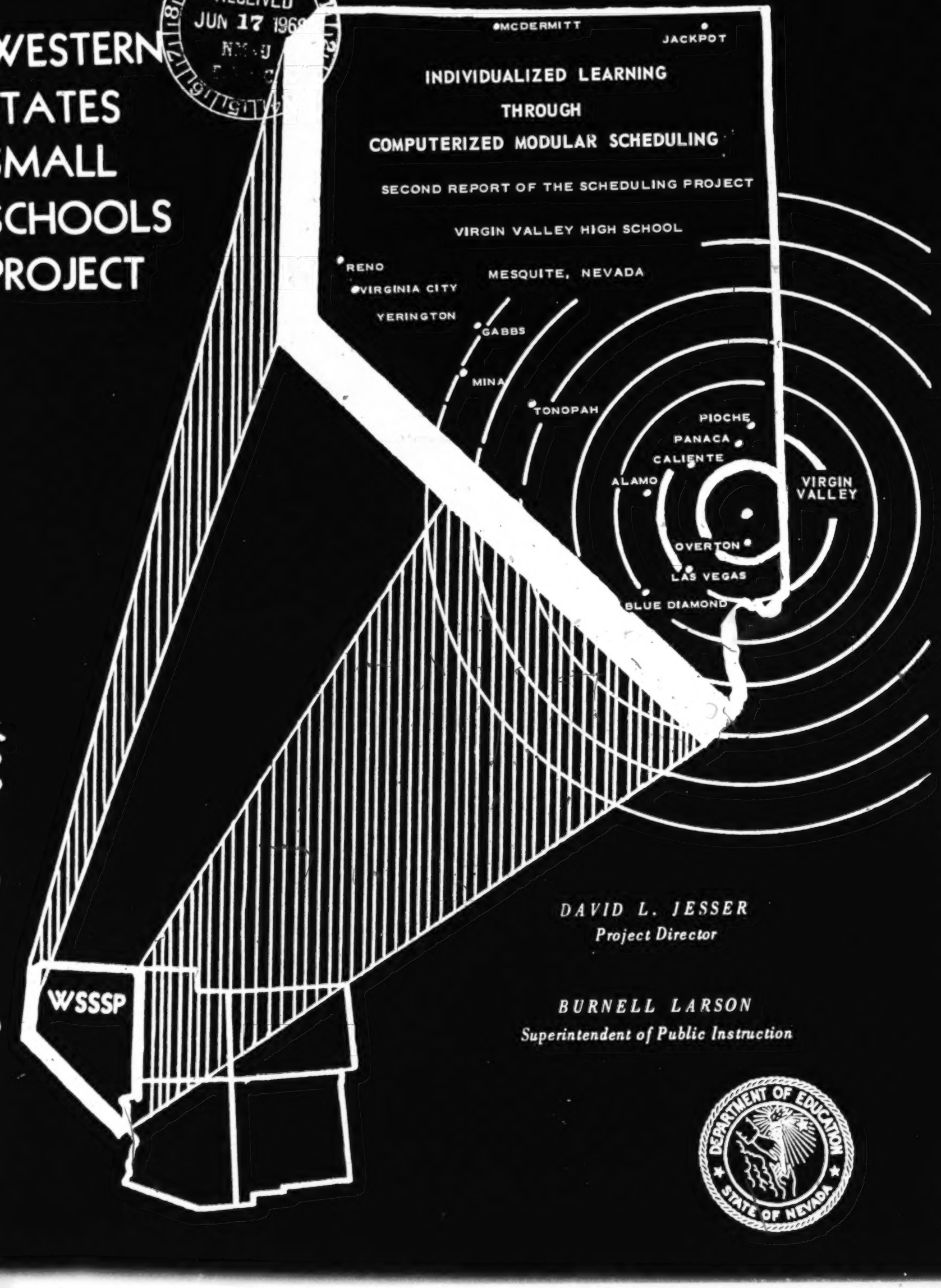
WESTERN
STATES
SMALL
SCHOOLS
PROJECT

INDIVIDUALIZED LEARNING THROUGH COMPUTERIZED MODULAR SCHEDULING

SECOND REPORT OF THE SCHEDULING PROJECT

VIRGIN VALLEY HIGH SCHOOL

MESQUITE, NEVADA



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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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INDIVIDUALIZED LEARNING

THROUGH

COMPUTERIZED MODULAR SCHEDULING

Second Report of Scheduling Project

at

VIRGIN VALLEY HIGH SCHOOL

MESQUITE, NEVADA

Prepared By

BLAINE W. ALLAN, PRINCIPAL

1964

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INDIVIDUALIZED LEARNING
THROUGH
COMPUTERIZED MODULAR SCHEDULING

Early in the fall of 1963 the faculty and staff of the Virgin Valley High School, located at Mesquite, Nevada, began to experiment with Modular Scheduling, using the computerized technique developed by the Secondary School Project of Stanford University and by far-sighted educators from Stanford University - - Professor Robert N. Bush, Director of Secondary Education; Dr. Dwight Allen, who is directly responsible for the computerized schedule idea; and James E. Smith, Research Assistant, who worked directly with our school. Directors of the Western States Small Schools Project: Ralph Bohrson, Coordinator of Five Western States Project, and Mr. David L. Jesser, Nevada State Director. This project is supported by the Ford Foundation. We are most grateful to these men. The cooperation of the Stanford Secondary School Project, the Western States Small Schools Project and the Administration and the Board of School Trustees of the Clark County School District has made this project possible.

Our school is one of four pilot schools selected by Stanford University to pioneer Flexible Scheduling and Curriculum Study. These schools are all operating on a modular schedule involving up to 105 period modules per week. Our school is using a 30 minute module with a total of 80 modules per week. The cooperating schools are:

Homestead High School, Sunnyvale, California.
Lincoln High School, Stockton, California.
Marshall High School, Portland, Oregon.
Virgin Valley High School, Mesquite, Nevada.

Through the joint efforts of the Secondary School Project of Stanford University, under the direction of Dr. Dwight Allen, and the Western States Small Schools Project, under the supervision of David L. Jesser, a computerized modular schedule was developed and placed into operation December 9, 1963. It is hoped that the information gained from our experience will be helpful to all small schools in which scheduling problems may occur.

Virgin Valley High School is one of seven senior high schools in the Clark County School District, which comprises all of Clark County, Nevada. This district has an area of 8,000 square miles, with a school population of 55,200 and employing 2,000 classroom teachers. Our small school has kindergarten through twelfth grades, with a total enrollment of 365 students, and operates on a 6-6 plan. The high school involves only 165 students. This school has been accredited by the Northwest Association each year since 1939. There are 14 teachers on the high school staff, including one teacher serving as half-time counsellor and one teacher serving as half-time administrator. We also have a full-time librarian and a full-time teacher aide. From 65 to 70 per cent of our graduates continue on in higher education, with approximately half of them completing college graduate work.

The school now operates on four basic concepts of instruction:

1. Large Group
2. Small Group
3. Laboratory Group
4. Independent Learning.

Large Group Instruction

Large group instruction does not necessarily pertain to numbers, but to specific types of instruction. For example: Large Group Instruction may be an illustrated lecture, making assignments, testing, listening to a guest speaker or a resource person, televised lesson, motion picture or film strips. It means that large groups, even up to 300 or 400, may be involved. The purposes of this type of instruction are:

1. To conserve teaching time.
2. To improve quality of instruction.
3. To use resource persons.
4. To use team teaching.
5. To obtain more efficient use of audio-visual equipment.
6. To obtain more efficient use of plant facilities.

Facilities needed are: Chairs with arms (or lap-boards) and areas large enough to accomodate large groups - - that is, auditorium, gymnasium, multi-purpose room, etc.

Small Group Instruction

Small Group Instruction is student-dominated learning. This consists of groups of five to fifteen in number to encourage student inter-action. Teachers have not been trained to sit down and let the students dominate the discussion. Examples of this concept of learning are:

1. Analytical discussions.
2. Exploratory discussions.
3. Reporting.
4. Debating
5. Seminar groups.
6. Role-playing.
7. Testing of understanding.

Illustrative purposes of Small Group Instruction are:

1. To provide opportunity for individual participation.
2. To discuss ideas raised in large group or laboratory discussions.
3. To create close student-teacher relationship.
4. To test effectiveness for grouping of pupils.

Physical facilities needed are: Table and Chairs (or portable desk-chair combination) and area large enough to accomodate small groups.

Laboratory Instruction

Laboratory Instruction involves even smaller groups of from one to five. This type of instruction involves special equipment and the physical facilities

are unique for each type of laboratory:

1. Science Laboratory.
2. Language Laboratory
3. Art and Shop.
4. Libraries.
5. Social Studies.
6. Office Machines.
7. Gymnasium and Playing Fields.
8. Resource Center

The types of laboratories are:

1. Experimental.
2. Drill.
3. Application
4. Research

Independent Learning

Independent Learning is fundamental and basic in the use of modular scheduling. The students must quest for knowledge in order to use the time wisely. The important concept of modular scheduling revolves about the individual; the schedule is tailored to the curriculum and not the curriculum to a rigid schedule.

Good examples of independent learning are:

1. Reading.
2. Writing.
3. Drill or practice.
4. Memorization.
5. Student-Teacher conferences.
6. Student-Student conferences.

The purposes of independent learning are:

1. To promote independence.
2. Provide opportunity for study under optimum conditions.
3. Provide opportunity for study beyond regular class time.
4. Permit maximum use of instructional resources.
5. Permit students to make wise and important decisions.

Physical facilities required are: Library laboratories in each of the areas of learning, study rooms, individual study alcoves and resource equipment and materials.

* * * * * * * * *

Stanford University Computer Computation Center utilizes the "1401" and the "7090" computers. The "1401" utilizes the data from key-punched cards and places it on a tape. The "7090" is the large computer with a memory capable of handling as many as a million or more concepts for a given program and does it from a sensitized tape. The information from the "7090" is then fed back into the "1401" machine from which the print-out is produced.

The possibility of developing a flexible high school schedule to serve educational needs of pupils has become a reality with the advent of electronic data processing procedures and high-speed computers. The magnitude is incredible. If an 80-period week is used (say for 1800 students) it would take a computer capable of a million operations a second about 25 years to systematically consider all alternatives possible for a single schedule. The use of computers for high school scheduling appears most promising. It is erroneous to assume that the computer machine will be able to make decisions. It can only implement decisions involving an intricate series of inter-locking factors, each of which can be reduced to logical alternatives, the end result being (or producing) a more sophisticated schedule than man could possibly originate.

The in-put materials from which the computer generates a schedule are as follows:

1. Teacher Course Assignments.
2. Teacher Course Structures.
3. Student Schedules.
4. Room Assignments.
5. Limitations for Programming.

Teacher Course Assignments

Every administrator has to deploy his teaching staff according to the classes offered in the curriculum. The following illustration (Illus. #1) is a possible Teacher Assignment before the course structure is developed. The next illustration (Illus. #2) is Teacher Assignment and load after the course structure has been developed.

Let us review each of the above briefly. The teacher has two variables:

> First, he is required to structure each class assigned according to the blocks of time desired to complete the teaching cycle.
>
> Second, he must decide the number of students he wishes to teach in each phase of the course structure.

Tradition has led us to assume that each class offered is structured like every other class offered - - For example, each class is composed of 30 students and meets 50 minutes daily 5 times each week. Little variation has evolved from this basic format of secondary education established over 100 years ago in the Boston grammar schools. Nevertheless, educators will agree that all curricular offerings should be taught in a manner which maximizes the ability to learn and that this probably is not possible for all subjects in the same structural format.

CLARK COUNTY SCHOOL DISTRICT
Virgin Valley High School
Mesquite, Nevada

TEACHERS' COURSE ASSIGNMENTS

TEACHER	COURSE DESCRIPTION	CLASS
Barrett	Girls' Phys. Ed.	Grades 7 - 8
	Girls' Phys. Ed.	Grade 9
	Girls' Phys. Ed.	Grades 10 - 11
	Drill Team	Selected H. S. Girls
	Typing I	Section I
	Typing I	Section II
Chamberlain	Math	Grade 7
	Math	Grade 8
	General Math	Grade 9
	Science	Grade 7
	Science	Grade 8
	Ind. Arts	Grades 7 - 8
	Ind. Arts	Grades 9 - 12
Clarke	Art	Grade 7
	Art	Grade 8
	Arts-crafts	Section I
	Arts-crafts	Section II
	Arts-crafts	Section III
	General Math	Grade 9
	Yearbook	Selected staff
Dunn	English (Remedial)	English I, II, III IV
	English I	Grade 9
	English II	Grade 10
	English III	Grade 11
	English IV	Grade 12
	Speech-debate	Grades 10 - 12
	Journalism	School Paper staff
Evans	Shorthand I	Grades 10 - 12
	Bookkeeping	Grades 10 - 12
	Gen. Business	Grades 9 -- 12
	Type II	Grades 11 - 12
	Spanish I	Section I
	Spanish I	Section II
Hughes	History	Grade 7
	History	Grade 8
	World History	Grade 9
	Health	Grades 11 - 12
	Boys' Phys. Ed.	Grade 9
	Boys' Phys. Ed.	Grades 10 - 11
	Athletics	

Illustration #1

Input Information

Course Structure

The Course Structure work-sheets are examples to help conceptualize a new approach to course structure, the concept being that widely variant course structures are appropriate. A modular concept of course structure is predicated on the premise that those involved in curriculum planning (teachers and administrators) can determine explicitly what kinds of specific learning activities students need to have. The modular concept is then adapted in such a manner that the facilitation of those elements associated with learning activities becomes manageable - - the elements being:

1. Organization of Course Structure.
2. Number of Students Involved in Specific Groups.
3. Teacher-Pupil Ratio.
4. Specific Time Allocation.

The entire curriculum can be thought of as an area to be scheduled, as shown in Illustration #3. The horizontal dimension represents the number of students; the vertical dimension represents the length of time. If the school has 200 students (using the module of 20), and the school day lasts from 8:00 A.M. to 4:00 P.M. (using the module of 30 minutes), the curriculum area can be shown in one solid block.

Now let us break the curriculum area down to a possible class period time. One possible modular unit is that of 15 students meeting for a single half-hour period (as shown in Fig. I), the scale being 15 students equal 3/16 of an inch width; one-half hour equals 3/8 of an inch length. Thus, a class of 30 students meeting for an hour conventional class unit time would appear as a multiple of the modular unit (Fig. II). (See Illustration #3, Page 11.)

A wide variety of structure is possible, all multiples of the basic modular unit.

Figure III shows 150 students for one-half hour.
Figure IV shows 15 students for 1½ hours.
Figure V shows 30 students for one-half hour.
Figure VI shows 60 students for 2 hours.
Figure VII shows 300 students for one hour.

School Y.Y. H.S.
Date 3/19/64

STANFORD SCHOOL SCHEDULING SYSTEM
Teachers List Data

Teachers Input Data		Manual Tally Data										
Teacher Code Number (3)	Teacher Name (12) Last Name First First (5) = Key	Total Load Sections	Total Load Modules	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.
010	BARRETT	6	34	21411	22611	11843	11844	11877	11882			
				1 2	1 4	1 6	1 8	1 8	1 6			
020	CHAMBERLAIN	15	50	21307	22307	21305	22308	21407	22407	21408	22408	21718
				1 8	1 2	1 8	1 1	1 1	1 6	1 1	1 6	1 1
				22718	11719	21816	22816					
				1 6	1 3	1 4	1 3					
030	CLARKE	9	41	11178	21601	22601	21602	22602	11603	21604	22604	11607
				1 4	1 4	1 3	1 4	1 3	1 9	1 6	1 1	1 4
040	DUNN	15	54	11100	21101	22101	21102	22102	21103	22103	21109	22109
				1 1	1 3	1 6	1 3	1 6	1 3	1 6	1 6	1 3
				21110	22110	31113	32113	33113	11174			
				1 6	1 3	1 1	1 2	1 3	1 2			
050	EVANS	16	55	11117	21118	22118	21612	22612	21613	22613	21614	22614
				1 8	1 2	1 6	1 4	1 2	1 2	1 4	1 3	1 4
				21512	22512	31671	32671	33671	21673	22673		
				1 6	1 1	1 3	1 2	1 2	1 2	1 4		

Illustration #2

SSSS 100 12364

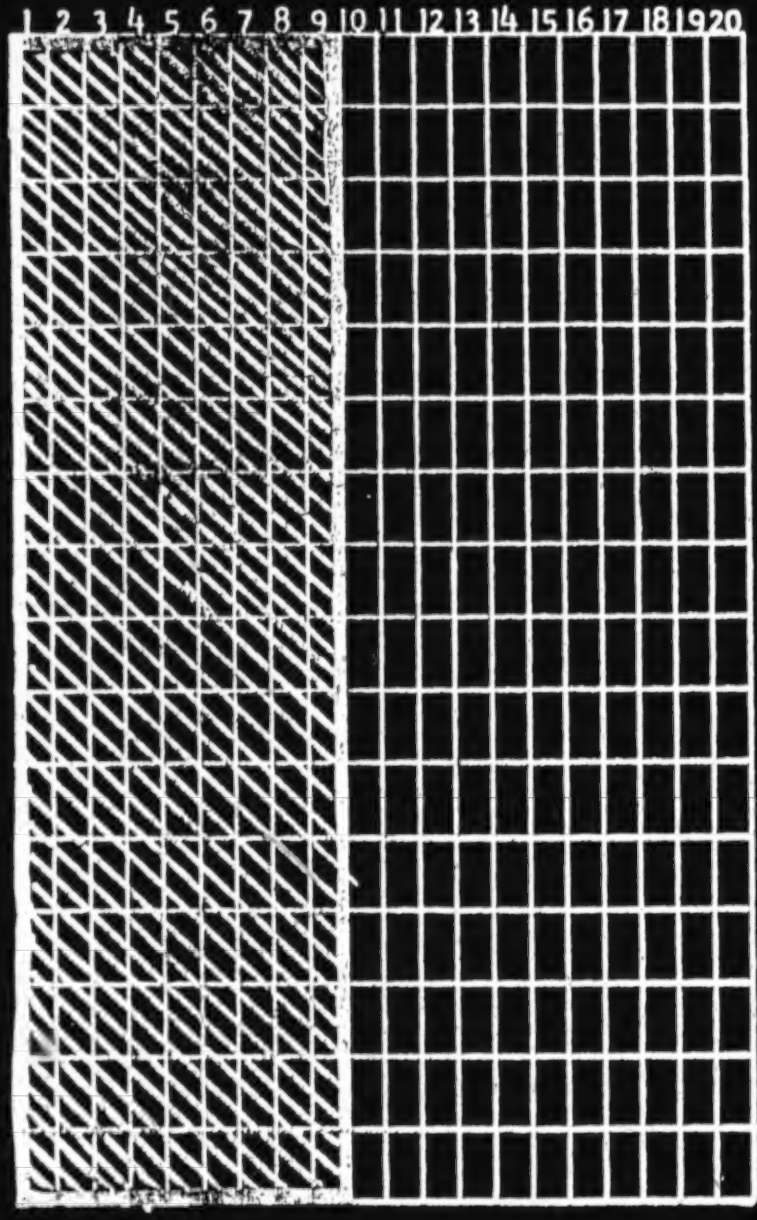
VIRGIN VALLEY HIGH SCHOOL

Course Curriculum Area

WORKSHEET

DEVELOPING A MODULAR CONCEPT OF COURSE STRUCTURE

200 Number of Students



Time In Mod.

16

Structures*

PHASE A _____

PHASE B _____

PHASE C _____

PHASE D _____

PHASE E _____

PHASE F _____

*Key Order for structure

1. Modular # stud. x
2. Modular # per. x
3. # mtgs. per cycle

MODULAR DEFINITION

☐ Time

Student

Student Module 20

Time Module 30

(Less Passing Period 3)

Illustration #3

Input Information

One possible modular unit is that of 15 students meeting for a single half-hour period.

15 students

1/2 Hr.

Fig. I

Scale: 15 students = 3/16" width
1/2 hour = 3/8" length

Thus a "class" of 30 students meeting for an hour (a conventional class unit) would appear as a multiple of the modular unit:

30 students

1 Hr.

Fig. II

A wide variety of structures is possible, all multiples of the basic modular unit:

150 students

1/2 Hr.

Fig. III

15 students

1-1/2 Hrs.

Fig. IV

30 students

1/2 Hr.

Fig. V

60 students

2 Hrs.

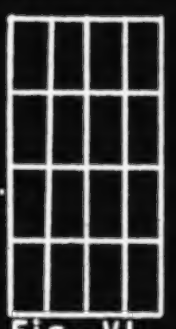


Fig. VI

300 students

1 Hr.

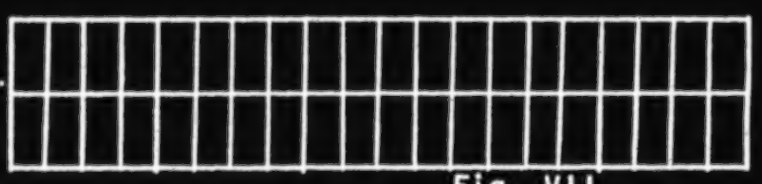


Fig. VII

Note that many other basic modular units are possible:

5 students		10 minutes
10 students		15 minutes
15 students	for	20 minutes
30 students		30 minutes
50 students		60 minutes
etc.		etc.

Illustration #4

Note that many other basic modular units are possible: 5, 10, 15, 30, or 50 students for 10, 15, 20, 30, or 60 minutes. (Note: The smaller the modular unit the greater the flexibility; but, also, the greater complexity.)

On the following illustrations are examples of various course structures which have been developed from the modular concept of the course structure. On Illustration #5, the worksheet identifies the course as Chorus. Here we have a one-phase course using a student module of 15 and a time module of 30. The phase is written:

4 modules of students 1 module of time 4 meetings per cycle

On Illustration #6. the worksheet identifies the course as Spanish. This is a worksheet with a 2-phase course structure. Using the same modules structuring a course for 15 students, the phase is written:

Phase A: 2 modules of students, meeting 2 modules of time, 2 meetings per cycle.

Phase B: 1 module of students, meeting 2 modules of time, 2 meetings per cycle.

Illustration #7 (for a Large Junior High School) has 3 phases, structuring the course for 300 students in 7th Grade English. Using the same student module of 15 and time module of 30 minutes the phase is written:

Phase A: 20 modules of students meeting 1 module of time, 3 meetings per cycle.

Phase B: 4 modules of students meeting 4 modules of time, 1 meeting per cycle.

Phase C: 1 module of student meeting 2 modules of time, 1 meeting per cycle.

This represents 9 modules of time per week, or 270 minutes total time.

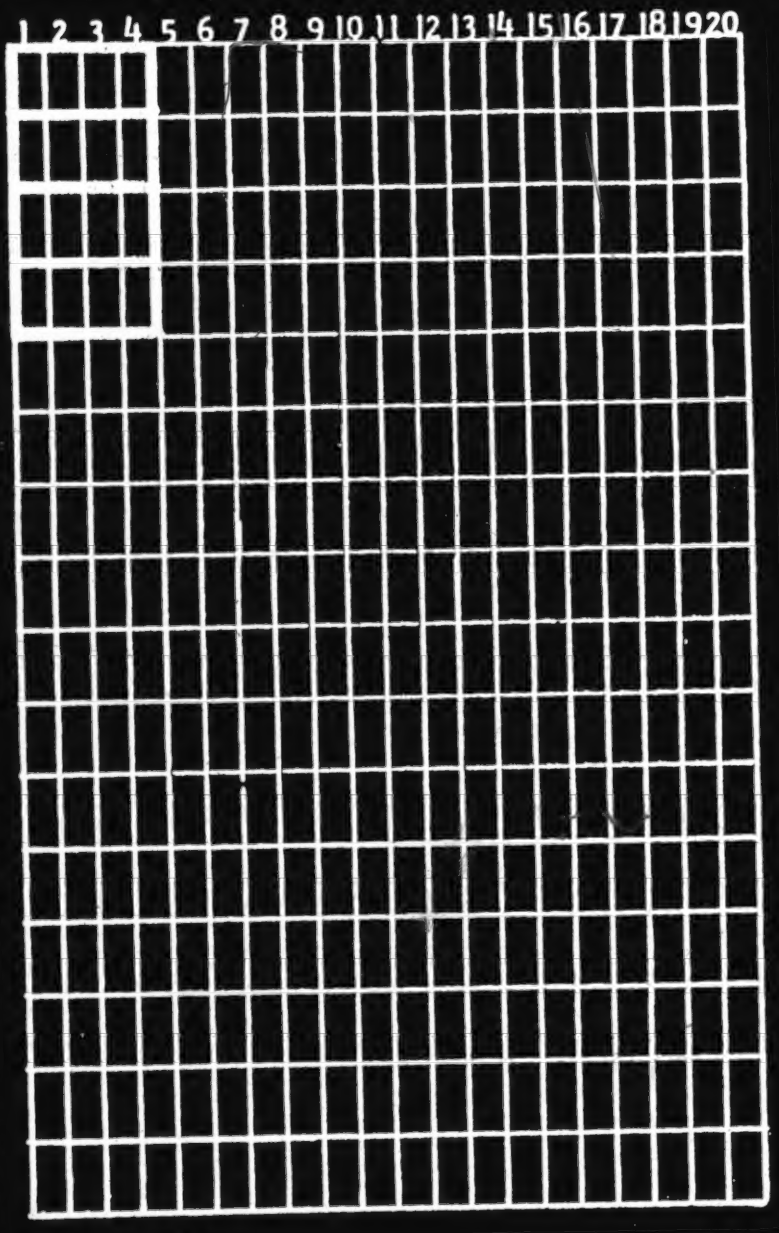
VIRGIN VALLEY HIGH SCHOOL

Course Chorus Instructor Smith

WORKSHEET

DEVELOPING A MODULAR CONCEPT OF COURSE STRUCTURE

Number of Students



Time In Mod.

4

Structures*

PHASE A 4 x 1 x 4

PHASE B

PHASE C

PHASE D

PHASE E

PHASE F

*Key Order for structure

1. Modular # stud. x
2. Modular # per. x
3. # mtgs. per cycle

MODULAR DEFINITION

Time

Student

Student Module 15

Time Module 30

(Less Passing Period 3)

Illustration #5

Input Information

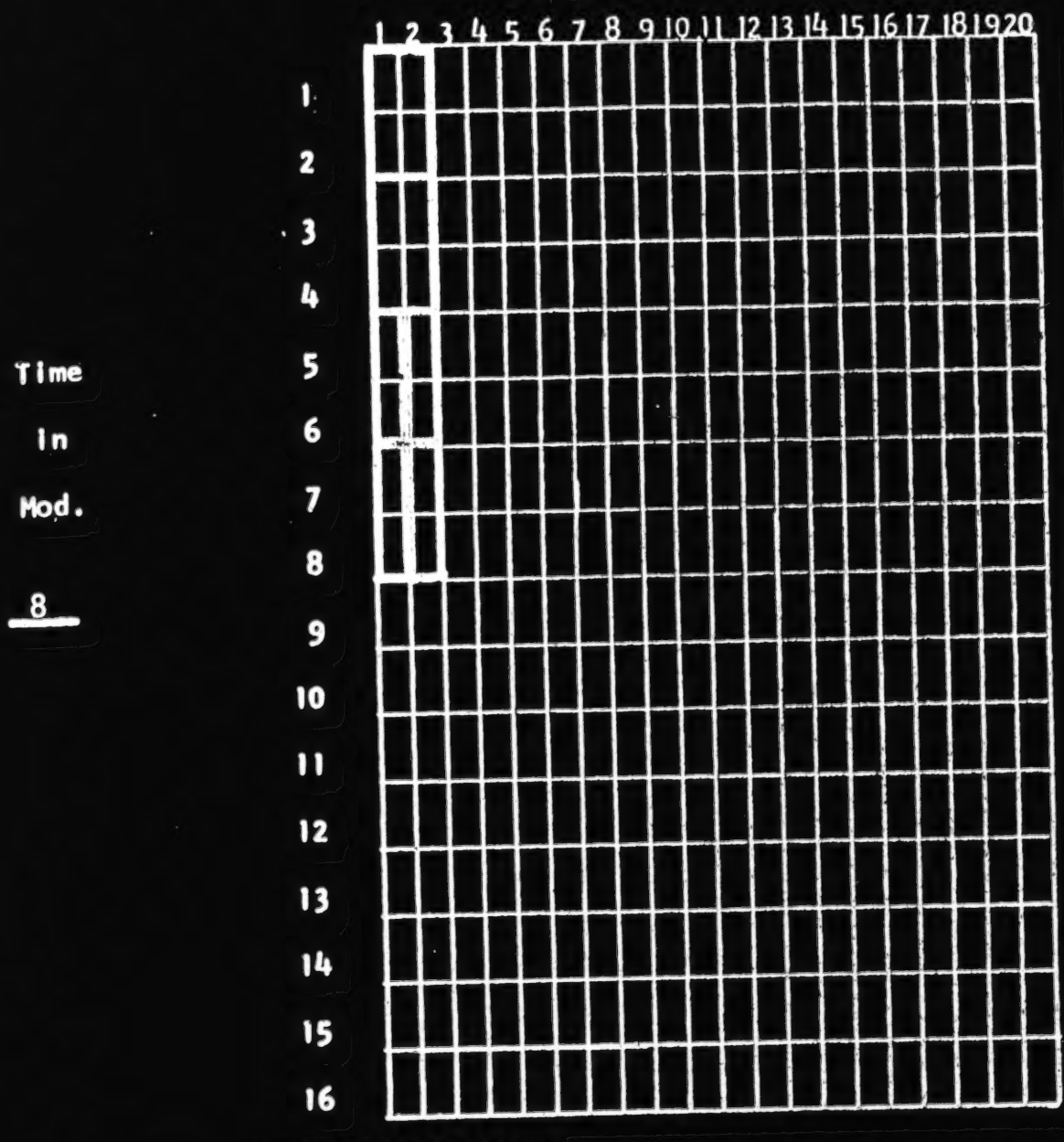
VIRGIN VALLEY HIGH SCHOOL

Course Spanish Instructor Evans

WORKSHEET

DEVELOPING
A MODULAR CONCEPT
OF COURSE STRUCTURE

30 Number of Students



Structures*

PHASE A 2 x 2 x 2

PHASE B 1 x 2 x 2

PHASE C

PHASE D

PHASE E

PHASE F

*Key Order for structure

1. Modular # stud. x
2. Modular # per. x
3. # mtgs. per cycle

MODULAR DEFINITION

Time

Student

Student Module 15

Time Module 30

(Less Passing Period 3)

Illustration #6

Input Information

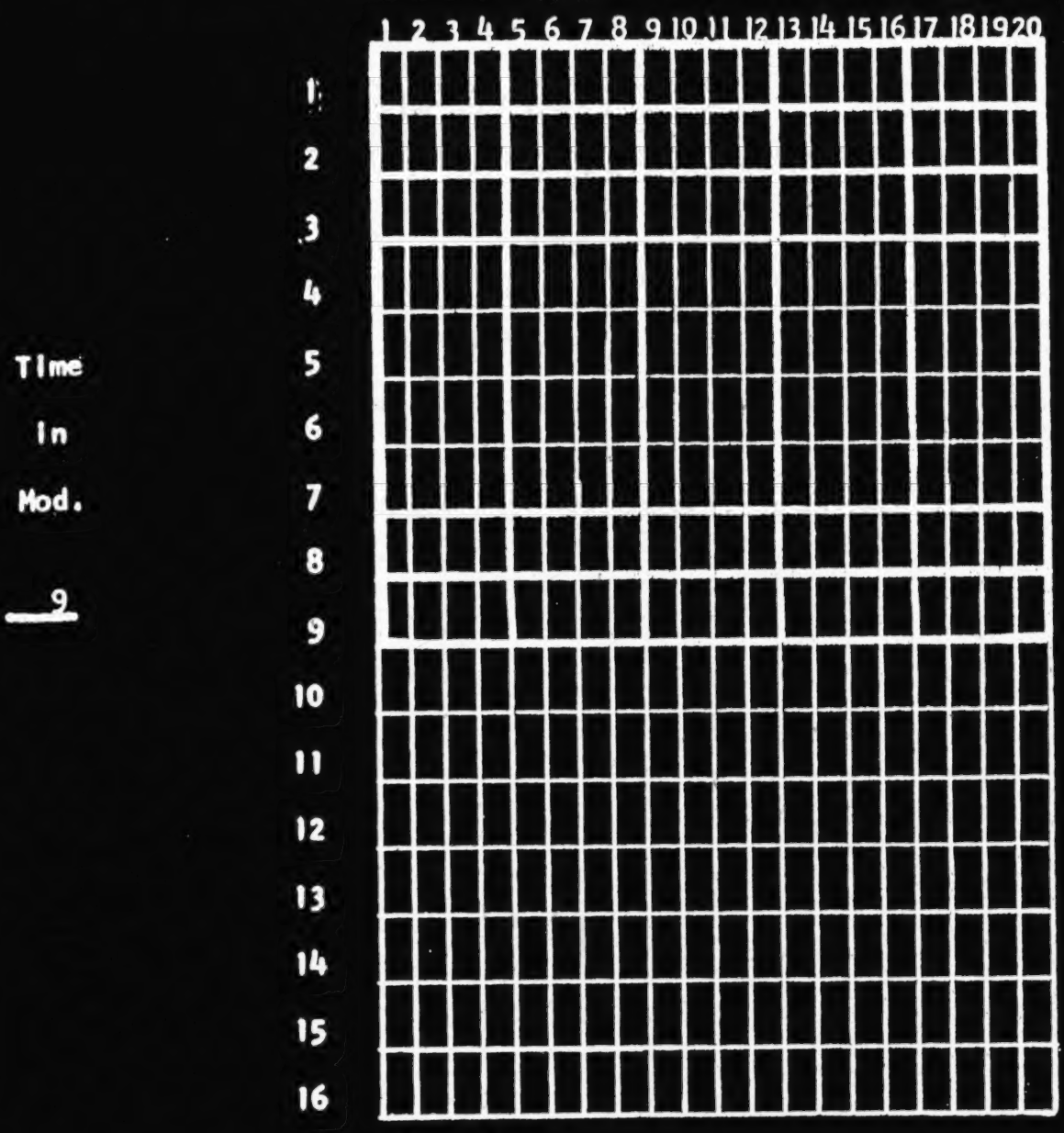
VIRGIN VALLEY HIGH SCHOOL

Course 7th English

WORKSHEET

DEVELOPING
A MODULAR CONCEPT
OF COURSE STRUCTURE

300 Number of Students



9

Structures*

PHASE A 20 x 1 x 3

PHASE B 4 x 4 x 1

PHASE C 1 x 2 x 1

PHASE D _____

PHASE E _____

PHASE F _____

*Key Order for structure

1. Modular # stud. x
2. Modular # per. x
3. # mtgs. per cycle

MODULAR DEFINITION

☐ Time

Student

Student Module 15

Time Module 30

(Less Passing Period 3)

Illustration #7

Input Information

Student Schedules

The spring registration consists of students selecting their courses by number and course description (See Illustration #8). They select these classes by priority, listing an alternate if so desired. They must also consider the number of modules in each course so that they might have 15 to 30 per cent of their time unscheduled for independent study. At the next registration (1965-66), the students will be limited to the following amount of time:

From a possible 80 modules per week - - (See Illustration #9).

Seniors may register for a minimum of 45 modules and a maximum of 55
Juniors may register for a minimum of 50 modules and a maximum of 60
Sophomores may register for a minimum of 55 modules and a maximum of 65
Freshmen may register for a minimum of 55 modules and a maximum of 65
7th & 8th may register for a minimum of 60 modules and a maximum of 70

Room Assignments

The next item to consider is the available school plant facilities which are adequate for Large Group Instruction, Small Group Instruction, Laboratory or Seminar Groups and Areas for Independent Study.

Illustration #10 indicates the facilities that are available at our school.

Limitations for Programming

The next item is Room Assignment Load after the Course Structures have been developed (See Illustration #11).

The limitations for programming are the restrictions you are asking the computer to place within the schedule. Illustration #12 indicates a few of the demands being asked for our school schedule:

Faculty Meeting - 2 modules per week
Class Meetings - 1 module per week

Girls' P.E. and Drill Team use GYM A.M. and Boys' P.E. and Athletics in P.M.
We are asking to combine Boys and Girls' P.E., both 7th and 8th Grades.
All boys taking Agriculture - 1 module per week.
All girls taking Home Economics - 1 module per week.
We are asking for 2 sections in Spanish, Health, English I and Typing I.
We are asking for Team-Teaching situations in the following subjects:

Science 7-8	English IV	World History
Athletics	General Math	Family Living and Economics

Illustration #13 shows the form asking for Faculty Meeting Time.

All of this data is key punched on IBM cards. The card information is then placed on tape and is run through the computer, from which it generates a sophisticated schedule The schedules produced through the computer are known as "Output." They consist of:

1. Student Programmed Class Schedule
2. Teacher Assignments
3. Class Lists
4. Room Schedule
5. Master Schedule

Illustration #14 is the student schedule for Evon Bundy, Grade 7.

Illustration #15 is the student schedule for Todd Tobler, Grade 12.

Make in Duplicate

STANFORD SCHOOL SCHEDULING SYSTEM

SCHOOL Virgin Valley High

STUDENT COURSE REQUEST FORM

Date 3/9/64

Counselor CTark Home Room Art Class 12 Sex Male

Code	Course	Code	Course	Code	Course	Code	Course	Code	Course	Code	Course
100	ENG	175	YRBK	404	CHEM	614	BKG	803	W ENS	901	VOAG
101	ENG	200	S SC	407	G SC	615	SHD	804	B ENS	902	VOAG
102	ENG	202	W HIS	408	G SC	619	SHD	809	CHO	903	VOAG
103	ENG	203	A HIS	409	SCI	671	TYPE	814	HEALTH	904	VOAG
104	ENG	204	A GOV	501	SPAN	673	GE BUS	815	HEALTH	905	FA SHOP
107	ENG	207	S SC	512	SPAN	700	FHA	816	DR TR	906	FARM
108	ENG	208	S SC	600	ART	701	H EC	843	AD PE	907	VOAG
109	ENG	301	ALG	601	ART	702	H EC	863	MUAP	908	VOAG
111	DRA	307	MATH	602	ART	703	H EC	871	B PE	909	VOAG
112	SPCH	308	MATH	603	ART	704	ECFL	872	ATH	910	VOAG
113	SP DEB	339	G MA	604	ART	708	H EC	877	BG PE	911	VOAG
117	RD SP	362	ALG	607	ART	718	I ART	881	G PE	965	STCOUN
118	RD SP	363	GEOM	611	TYPE	719	I ART	882	G PE	985	FA ME
174	JOUR	400	SCI	612	TYPE	802	BAND	900	FHA	995	CL ME
		402	BIOL								

STUDENT MASTER CARD

Student Number

ALGER K. JESS

Student Name (Last name first)

COURSE REQUEST DETAIL CARDS

PRIORITY NUMBER	CARD 2 COURSE REQUESTS	CARD 3 1st ALT.
1	109	204
2	204	109
3	704	815
4	815	704
5	602	872
6	872	602
7	603	601
8	Speed Reading	
9		
10		

Illustration #8

VIRGIN VALLEY HIGH SCHOOL

STUDENT REGISTRATION

TIME MODULES PER WEEK

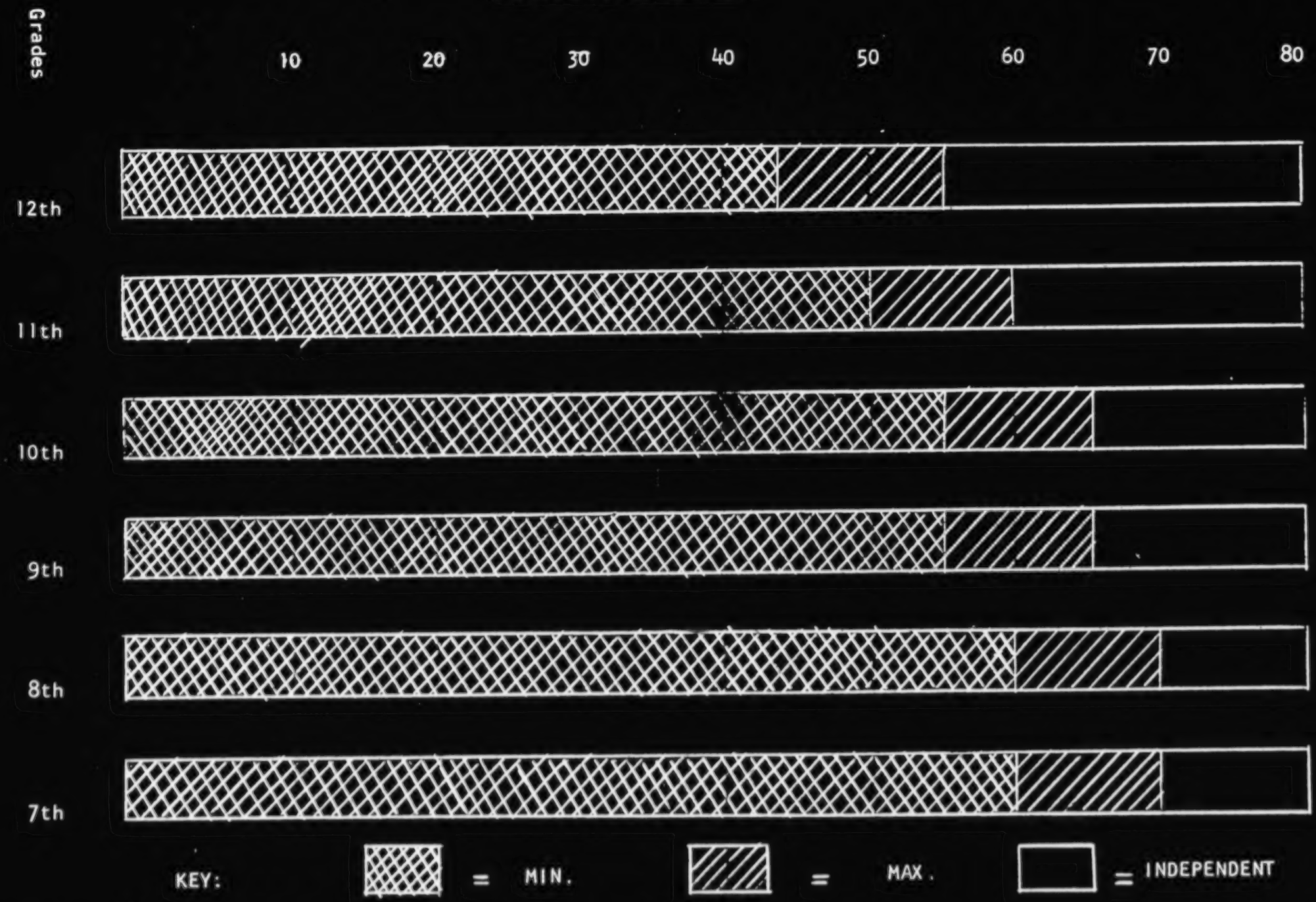


Illustration #9

CLARK COUNTY SCHOOL DISTRICT
VIRGIN VALLEY HIGH SCHOOL
Mesquite, Nevada

SCHOOL FACILITIES

Large group instruction - -

Room	Capacity
Auditorium	300
Cafeteria	40
Music Room	60
Gymnasium	60

Small group instruction - -

Music
Cafeteria
Art
Commercial
English
Science
Social Studies I
Social Studies II
Vo-Agr.
Home Ec.

Individual Study - -

Library	35
Cafeteria	15
Teacher Room	6
Student Council	6

Illustration #10 Input Information

School Virgin Valley
Date 3-19-64

STANFORD SCHOOL SCHEDULING SYSTEM
Room List Data

Page 2 of 5

Room Input Data		Manual Tally Data											
Room Code Number (3)	Room Name (6) First (4) = Key	Total Load Modules	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.	Crs. Sect. Mods.
			11843	11844	11871	11872	11877	11882					
020	GYM (60)	46	1 6	1 8	1 8	1 10	1 8	1 6					
			11175	21601	22601	21602	22602	11603	21604	22604	11607		
025	ART (30)	35	1 4	1 3	1 3	1 4	1 3	1 9	1 6	1 1	1 4		
			21611	22611	21612	22612	21613	22613	31671	32671	33671		
030	CØMM (30)	25	1 2	1 4	1 4	1 2	1 2	1 4	1 3	1 2	1 2		

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Illustration #11

SSSS 200 12364

CLARK COUNTY SCHOOL DISTRICT
VIRGIN VALLEY HIGH SCHOOL
Mesquite, Nevada

LIMITATIONS FOR PROGRAMMING

1. Faculty meeting - two modules per week.
2. Class meetings and other activities - one module per week.
3. Girls' P.E. and Drill Team A.M. for Gym.
4. Boys' P.E. and Athletics P.M. for Gym.
5. Co-ed P.E. for 7th and 8th grades.
6. All Vo-Agriculture boys - one module per week.
7. All Home Ec. girls - one module per week.
8. Spanish - two sections.
   Health - two sections.
   English I - two sections.
   Typing I - two sections.
9. Team teaching:

Science 7th and 8th	Prows and Chamberlain
English IV	Smith and Dunn
Athletics	Hughes and Wittwer
World History	Hughes and Wittwer
General Math	Clarke and Chamberlain
Family Living and Economics	Williams and Lee

Illustration #12

Input Information

Date 3-19-64 | Time Reservation Data | Location Data { Reservation Area 001 | Res. Page 1 of 1

UNIFORM RESERVATION CARD

UNIFORM	Reservation Code* (1)	Res. Area I.D. Code (5)	FMR (2)	LMR (2)	UNIFORM	(5 days equal reservations)
0	0	001	1	2	0	Reserved For Faculty Meetings

NONUNIFORM MASTER RESERVATION CARD (Must be followed by one reservation card for each day)

NONUNIFORM	Reservation Code* (1)	Res. Area I.D. Code (5)	NONUNIFORM	NONUNIFORM	No. of Days Reserved** (1)	
1			0	0		

NONUNIFORM DETAIL RESERVATION CARD (Must be preceded by master reservation card)

	Day In Cycle Code*** (1)	No. of Mods. Res. in Day (2)		1st Mod. Res. (2)	2nd Mod. Res. (2)	3rd Mod. Res. (2)	4th Mod. Res. (2)	5th Mod. Res. (2)	6th Mod. Res. (2)	7th Mod. Res. (2)	8th Mod. Res. (2)	9th Mod. Res. (2)	10th Mod. Res. (2)	11th Mod. Res. (2)	12th Mod. Res. (2)	****
Card 1	2	2	=	1	2											
2			=													
3			=													
4			=													
5			=													

* = Res. Codes 0 = School Wide, 1 = Teacher, 2 = Room, 3 = Student, 4 = Time Pattern (Crs.)

** = No. of days res. = Number of days requiring time reservations

*** = Day in cycle = 1 = Monday, 2 = Tuesday, 3 = Wednesday, 4 = Thursday, 5 = Friday

**** = Reservations in one day must not exceed modules in a day.

SSSS 400 12364

Illustration #13

STUDENT. 9Bundy Evon (Grade 7)

STUDENT PROGRAM

Class Schedule

SCHOOL YEAR Virgin Valley H. S.

Period	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY		
	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER
1				BG PE877	Gym	Barrett	Soc St 207	0000	Hughes	BG PE877	Gym	Barrett	BG PE877	Gym	Barrett
2				BG PE877	Gym	Barrett				BG PE877	Gym	Barrett	BG PE877	Gym	Barrett
3	SCI 467	SCI	Prows	Math 307	SS2	Chamb	SCI 467	SCI	Prows				SCI 467	SCI	Prows
4	SCI 467	SCI	Prows	Math 307	SS2	Chamb	SCI 467	SCI	Prows				SCI 467	SCI	Prows
5	SOC St 267	SS	Hughes	SP CH 112	SS1	Smith	Soc ST 267	SS	Hughes	SP CH 112	SS1	Smith	Soc St 267	SS	Hughes
6	SOC St 267	SS	Hughes	SP CH 112	SS1	Smith	Soc St 267	SS	Hughes	SP CH 112	SS1	Smith	Soc St 267	SS	Hughes
7	ENG 167	SS	Lee	SCI 407	SS1	Prows	Eng 167	SS	Lee	SCI 407	SS1	Prows	ENG 167	SS	Lee
8	ENG 167	SS	Lee	ENG 167	SS	Lee	ENG 167	SS	Lee	ENG 167	SS	Lee	ENG 167	SS	Lee
9	LUNCH			RD SP 117	SS2	Olsen	LUNCH			LUNCH			LUNCH		
10	RD SP 177	SS2	Olsen	LUNCH			RD SP 177	SS2	Olsen						
11	RD SP 177	SS2	Olsen	Art 667	Art	Clarke	RD Sp 177	SS2	Olsen	Art 667	Art	Clarke	Art 667	Art	Clarke
12	RD Sp 177	SS2	Olsen	Art 667	Art	Clarke	RD SP 177	SS2	Olsen	Art 667	Art	Clarke			
13	Math 367	HE	Chamb				Math 367	HE	Chamb				Math 367	HE	Chamb
14	Math 367	HE	Chamb				Math 367	HE	Chamb				Math 367	HE	Chamb

Illustration #14

STUDENT: 4TOBLER TODD (12 Grade)

STUDENT PROGRAM

CLASS SCHEDULE

SCHOOL: Virgin Valley H. S.
YEAR: 1963-64

PERIOD	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY		
	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER
1				YRBK 175	0000	Clark				YRBK 175	0000	Clark	PHYS	SCI	PROWS
2				YRBK 175	0000	Clark				YRBK 175	0000	Clark	PHYS	SCI	Prows
3															
4				PHYS 434	SCI	Prows									
5	AGOVT 264	0000	Wittwer	Phys 434	SCI	Prows	AGOVT 264	0000	Wittwer	PHYS 434	SCI	Prows	AGOVT 264	0000	Wittwer
6	AGOVT 264	0000	Wittwer	Phys 434	SCI	Prows	AGOVT 264	0000	Wittwer	PHYS 434	SCI	Prows	AGOVT 264	0000	Wittwer
7	ENG 104	SS1	Dunn	Eng 104	SS1	Dunn	Eng 104	SS1	Dunn	Eng 104	SS1	Dunn	Eng 104	SS1	Dunn
8	ENG 104	SS1	Dunn	Phys 404	COnn	Prows	Eng 104	SS1	Dunn				ENG 104	SS1	Dunn
9	Lunch			Lunch			Lunch			Lunch			Lunch		
10	AGOVT	AUD	Wittwer				AGOVT 204	AUD	Wittwer						
11	Farm Sh 965	Shop	Reid												
12	Farm Sh 965	Shop	Reid				Art 663	Art	Clarke				Art 663	Art	Clarke
13				HEA 815	SS2	Hughes	Art 663	Art	Clarke	Hea 815	SS2	Hughes	Art 663	Art	Clarke
14				HEA 815	SS2	Hughes	Art 663	Art	Clarke	Hea 815	SS2	Hughes	Art 663	Art	Clarke
15	Boys PE 872	Gym	Hughes	Farm Sh 965	Shop	Reid	Boys PE 872	Gym	Hughes	Farm Sh 965	Shop	Reid	Boys P.E.872	Gym	Hughes
16	Boys PE 872	Gym	Hughes	Farm Sh 965	Shop	Reid	Boy. E 872	Gym	Hughes	Farm Sh 965	Shop	Reid	Boys PE 872	Gym	Hughes

Illustration #15

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STUDENT PROGRAMMED CLASS SCHEDULE

Five copies are produced by the computer of each of the "output" schedules - - one for the office of the Administration, one for the office of Counselling, one for the attendance officer and two for student or teacher use. The number preceding the name indicates the year in which the student will graduate. Open areas on a schedule indicate the student's independent time when he is not assigned to a formal study period. The numbers from 1-16 are the modules per day, the odd numbers coming on the hour and the even numbers on the half-hour. The numbers following the classes indicate a description of the class. The first number on the extreme left, or the 100's digit, identifies the course:

Language Arts	- 100	Art & Commercial	- 600
Social Studies	- 200	Home Ec. & Ind. Arts	- 700
Mathematics	- 300	Music, Health & Physical Education	- 800
Science	- 400	Vocational Agr.	- 900
Foreign Lang.	- 500		

The center numeral, or the 10's digit, refers to the type of instruction:

"0" and "1"	- Large Group Instruction
"3"	- Laboratory Instruction
"6", "7" & "8"	- Small Group Instruction

The unit digit identifies the student in his class:

"1"	- Freshman	"5"	- Non-Graded
"2"	- Sophomore	"7"	- 7th Grade
"3"	- Junior	"8"	- 8th Grade
"4"	- Senior	"9"	- Non-Graded

For example:

"101"		"367"	
1	- English	3	- Mathematics
0	- Large Group Instruction	6	- Small Group Instruction
1	- Freshman	7	- 7th Grade

7th and 8th graders are scheduled with 15 to 20% of their time open for independent study. Juniors and Seniors are scheduled with 30 to 40% of their time for independent learning.

Teacher Assignments

The Teacher Assignment Schedules are similar to the Student Schedules. The open part of the schedule is for teacher use in preparation or helping the students in their independent time.

We have attempted to schedule teachers with a maximum load of 50 modules per week. Mr. Reid's schedule (Illustration #16) has 40 teaching modules per week and Mr. Prows' schedule (Illustration #17) has 54 teaching modules per week.

Class Lists

Each teacher receives a class list (Illustration #18 and 19) for each phase of the structured course. Some courses have multiple phases; therefore, the teacher would receive multiple class lists even though it is the same course. Because of scheduling conflicts, students may not be programmed in every phase of each course, but would be required to make up the phase not scheduled on their independent time.

Room Assignment

The Room Assignment Schedule is similar to the Student and Teacher Schedule; the open space indicates when the room is available for independent work (See Illustration #20).

Master Schedule

The Master Schedule lists every phase of every course, starting with the first phase of each course, then the second phase, third phase, etc. (Illustration # 21) It indicates the days each phase is scheduled; STP is the Scheduled Time Period; Modules; Teacher's Name; The Course and Number; The Room Assigned and Enrollment in each phase.

STUDENT: REID

STUDENT PROGRAM

Teacher Assignment

SCHOOL: VIRGIN VALLEY
YEAR:

Per.	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY		
	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER
1							VO AG 901	AUD	(All VO	AG Students)					
2	VO AG 964	SHOP													
3	VOAG 963-4	SHOP		VO AG 963	SHOP					VO AG 963	SHOP				
4	VOAG 963-4	SHOP		VO AG 963	SHOP					VO AG 963	SHOP				
5							VO AG 962	SHOP		VO AG 962	SHOP		VO AG 962	SHOP	
6							VO AG 962	SHOP		VO AG 962	SHOP		VO AG 962	SHOP	
7	VO AG 932	SHOP		VO AG 961	SHOP		VO AG 962	SHOP		VO AG 961	SHOP				
8	VO AG 932	SHOP		VO AG 961	SHOP					VO AG 961	SHOP		VO AG 933	SHOP	
9	LUNCH			LUNCH			LUNCH			LUNCH			LUNCH		
10													VO AG 904	SHOP	
11	FARM 935	SHOP					VO AG 964	SHOP					VO AG 904	SHOP	
12	FARM 935	SHOP					VO AG 964	SHOP							
13	VO AG 961	SHOP					VO AG 964	SHOP							
14	VO AG 961	SHOP		FARM 965	SHOP		VO AG 961	SHOP		FARM 965	SHOP				
15				FARM 965	SHOP		VO AG 961	SHOP		FARM 965	SHOP				
16				FARM 965	SHOP					FARM 965	SHOP				

Illustration #16

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STUDENT: PROWS

STUDENT PROGRAM
Teacher Assignment

SCHOOL: Virgin Valley
YEAR: 1963-64

PERIOD	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY		
	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER
1				TENNIS 816	SCI					TENNIS 816	SCI		PHYSICS 434	SCI	
2				TENNIS 816	SCI		BIOL 402	Music		TENNIS 816	SCI		PHYSICS 434	SCI	
3	SCI 467	SCI		GSCI 439	SCI		SCI 467	SCI		GSCI 439	SCI		SCI 467	SCI	
4	SCI 467	SCI		PHYS 434	SCI		SCI 467	SCI		GSCI 439	SCI		SCI 467	SCI	
				PHYS 434	SCI					PHYS 434	SCI				
5															
6				PHYS 434	SCI					PHYS 434	SCI				
7				SCI 407	AUD					SCI 407	AUD		ALG 301	SCI	Section II
8				PHYS 404	AUD					GSCI 409	AUD		ALG 301	SCI	Sec II
9	LUNCH			LUNCH			LUNCH		Sec. I-II	LUNCH			LUNCH		
10	ALG 361	SCI	Sec I-II	BIOL 462	SCI		ALG 361	SCI							
11	ALG 362	SCI		BIOL 462	SCI		ALG 362	SCI		ALG 362	SCI		ALG 362	SCI	
12	ALG 362	SCI		BIOL 462	SCI		ALG 362	SCI		ALG 362	SCI		ALG 362	SCI	
13				BIOL 432	SCI					BIOL 432	SCI				
14				BIOL 432	SCI					BIOL 432	SCI				
15	ALG 301	SSI	Sec. I	ALG 301	SCI	Sec. II	ALG 301	SSI	Sec. I	ALG 301	SCI	Sec. II	ALG 301	SSI	Sec. I
16	ALG 301	SSI		ALG 301	SCI		ALG 301	SSI		ALG 301	SCI		ALG 301	SSI	

Illustration #17

CLASS LIST

PERIOD	TEACHER	COURSE	ROOM	SCHOOL	YEAR
W	1 REID	VOAG 901	AUD	VIRGIN VALLEY H	1

STUDENT NAME
4BUNDY CLIVEN
4FAUGHT JACK
4LEAVITT PAUL D
4NOEL GARY
4REBER DON L
4SHANER ED
4WAITE PAUL L
5ABBOTT PERRY
5ALGER JESS
5GRAN BILL
5HARDY BLAINE
5HARDY RODDY V
5HUGHES LEN
5HUNT DEAN
5LEAVITT MITCHEAL
5LEAVITT RUSSELL
5THURSTON DENNY
6ALLAN ROBERT B
6ANDERSON JOHN A
6HARDY KIM
6HUGHES JAMES M
6HUGHES KELBY
6PETERSON PELVIN D
6REBER DAN
6RUTH EDDIE
6TOBLER JAY
7ABBOTT LYMAN
7FREHNER CREED
7GREEN ANDREW
7HAWKINS MELVIN
7HUGHES MICHAEL J
7HUGHES GARY L
7JOHNSON RANCY
7LEAVITT DELWIN
7PETERSON MERVIN L
7PRITCHARD TOM
7QUISENBERRY JOE
7RUBER BRENT
7SHANER EUGENE
7SMITH BILL
7WOODS CHARLES V

Illustration #18

CLASS LIST

OD	TEACHER	COURSE	ROOM	SCHOOL	YEAR
F13	WITTWER	APIST263	SS2	VIRGIN VALLEY H	1

STUDENT NAME
UNCY CLIVEN
BBCTT PERRY
LGER JESS
LLAN NCRMA
NDERSON PAT
ARNUM LINDA
ARRETT DENNIS
URNS ANDREA
LANDERS MARY F
IST LINDA C
RAN BILL
HARDY BLAINE
HARDY CHARLES
HARDY RCCCY V
HUGHES CHYRREL G
HUGHES LEN
HUNT DEAN
JACCHS WANDA S
JCRCAN SHARI
LEAVITT MITCHEAL
LEAVITT RUSSELL
OLSCN CHERYL
SIMSONSEN DIANE
THORNTON DOYAL K
THURSTCN CENNY
WAITE GAIL M
WHITE GERALDINE

Illustration #19

STUDENT SS1

STUDENT PROGRAM

Room Assignment

VIRGIN VALLEY H
YEAR

PERIOD	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY		
	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER	COURSE	ROOM	TEACHER
1							HMEC 701		WILLI						
2							BIOL 402		PROWS						
3							AHIST203		WITTW				AHIST203		WITTW
4															
5				SP CH112		SMITH				SP CH112		SMITH			
6				SP CH112		SMITH				SP CH112		SMITH			
7	ENG 104		DUNN	SCI 407		PROWS	ENG 104		DUNN	SCI 407		PROWS	ENG 104		DUNN
8	ENG 104		DUNN	ENG 107		LEE	ENG 104		DUNN	ENG 107		LEE	ENG 104		DUNN
9															
10	ENG 103		DUNN				ENG 103		DUNN	SPAN 501		EVANS	SPAN 501		EVANS
11	DRAMA111		SMITH				DRAMA111		SMITH	DRAMA111		SMITH	DRAMA111		SMITH
12	DRAMA111		SMITH				DRAMA111		SMITH	DRAMA111		SMITH	DRAMA111		SMITH
13															
14															
15	ALG 301		PROWS	MU AP863		SMITH	ALG 301		PROWS	MU AP863		SMITH	ALG 301		PROWS
16	ALG 301		PROWS	MU AP863		SMITH	ALG 301		PROWS	MU AP863		SMITH	ALG 301		PROWS

Illustration #20

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MASTER SCHEDULE - - VIRGIN VALLEY H

	DAYS	STP	TEACHER	COURSE	ROOM	ENROLLMENT
1	T	7	DUNN	ENGLISH 100	AUD	104
2	M WTF	3	EVANS	RD-SPELL 117	SS2	28
3	T T	16	DUNN	JOURNAL 174	ENG	8
4	W	5	CLARKE	YEARBOOK 175	ART	3
5.	M WTF	7	WATTS	SP READ 184		0
6	T	3	WITTWER	SOC SCI 200	AUD	119
7	T	3	CLARKE	ART 601	ART	15
8	M	3	CLARKE	ART 602	ART	6
9	W	1	CLARKE	ART 603	ART	9
10	T	10	CLARKE	ART 604	ART	8
11	M WTF	16	CLARKE	ART 607	ART	45
12	T	15	EVANS	TYPING 612	COMM	24
13	M	7	EVANS	TYPING 613	COMM	10
14	W	13	BARRETT	BOOKKEEP 614	COMM	7
15	T	3	LEE	SHORTHAND 619	COMM	4
16	F	13	EVANS	OFF PRACT 671	COMM	3
17	T	1	CHAMBERLAIN	IND ARTS 719	SHOP	0
18	M WTF	7	WITTWER	HEALTH 814	SS2	32
19	W F	13	WITTWER	HEALTH 815	SS2	4
20	M W F	5	BARRETT	ADV PE 843	GYM	26
21	M WTF	3	BARRETT	DRILL TEAM 844	GYM	16
22	T TF	1	SMITH	MUSIC APP 863	MUSI	2
23	M WTF	13	HUGHES	BOYS PE 871	GYM	12
24	MTWRF	15	HUGHES	ATHLETIC 872	GYM	0
25	TSRF	1	BARRETT	B-G-PE 877	GYM	53
26	M W F	7	BARRETT	GIRLS PE 882	GYM	8

RESUME OF FINDINGS AFTER ONE YEAR OF OPERATION

1. We have individualized each student as a person. The most important facet of individualizing learning is to help each student to build a possible and workable self-image.
2. Teachers have become more concerned about individual student learning and less concerned about imparting facts. It is changing the role of the teacher to that of a resource person directing individuals or groups of individuals to sources of knowledge.
3. We have opened up time for teacher preparation and planning.
4. We have greatly enhanced the library atmosphere. Students use the library for library purposes - - not because they are forced to go for a study period or to wait the hour out; but to use it in their independent time for research, preparation of assignments, reading for pleasure, etc.
5. We have broadened our curriculum offerings by utilizing programmed instruction and correspondence courses, making it possible for each student to structure his own course of study. We have increased the length of the school day, making it possible for students to do more of their school work at school. We are offering four evening classes in which day students are also enrolled.
6. We are developing student attitudes for life-long learning. Our community is becoming "education minded"; members are highly interested in the modular schedule concept and are responding to evening adult courses under the same program.
7. We are changing the image of the school plant and its facilities. Independent learning requires resource centers as well as resource people. It requires areas for small group meetings of the seminar type. It requires individual laboratory areas - - reading, listening, experimental, exploratory.
8. We are placing more responsibility on the students for decision-making, for better utilization of independent time, preparation of assignments, extended

research or exploration in their own field of interest and developing a deeper respect for fellow students, teachers and for the school in general.

9. Community resources are brought into school by the use of professional and semi-professional persons to supplement textbook materials. Our community is broadened by the use of the amplified telephone.
10. Response from students is favorable; they like being more on their own and they enjoy using technological equipment. They like being treated as adults and receiving individual attention.

There is a quest for knowledge at Virgin Valley Schools.

Student and Teacher Responses

Response from students:

Mitchael Leavitt, Student Body President

"The project we are now trying is very good. If the student sees the advantages of the time which he or she has, and will work, it can be very profitable to him; but if this time is wasted, it will accomplish little.

"I believe that it will better prepare us for college and teach us to use our time wisely in the future."

Ella Jones, Student Body Secretary

"I have experienced Modular Scheduling for nine months. So far I personally have found it very successful. This system offered me more courses so I had a bigger chance of taking courses which I liked best and where I showed the most aptitude. With Modular Scheduling I was able to work more during my independent time on my preferred courses. I have made more use of the library and other instructional resources.

"I think education is very important. I am proud to be a pioneer in this new system, which is a big step toward the advancement of education."

Len Hughes, President, Future Farmers of America

"Modular scheduling, through my experience with it, has proven to be very good. I like it very much because it gives me sufficient time to complete the biggest share of my homework during school time. It also gives me the challenge to see just what kind of self-control I have to use my independent time in the right way. It gives me a chance to grow and prepares me to be a better college student. These are some reasons why I am strongly in favor of Modular Scheduling in high schools."

Melvin Peterson, Junior Class President

"I like the modular scheduling because the classes are broken into sections of different time lengths. Most of the classes you like are longer, which gives you more time to work. You also have more study time; but I think too many students do not use the time wisely."

Eddie Ruth, Junior Class Vice-President

"I think that the modular schedule is a great improvement over the older system. Although I am sometimes caught a little short on longer free periods, I find that I am usually able to do my school work during school time. On this schedule students seem to have more of a unity of studying and in discussing topics. I like this system very much."

Norman Allan, Senior Student

"I feel that modular scheduling is a very good program, especially for the faster and more brilliant people of the schools. There is only one disadvantage: When you have two or three classes that only meet for one hour each week, this is too much extra work to do in your independent time. If you are taking only four or five classes, this would be all right but when you take seven or eight, it gets to be too much of a load.

"I would like to make one suggestion. Don't let the students sign up for more than eight classes at registration. I have nine classes and I feel I am not doing too well in some of them. I do like modular scheduling, though, because it puts more responsibility on the student's shoulders; if you want to learn, you will take this responsibility. Also, it helps prepare you for college as well as your life ahead in the busy world where you have many responsibilities come upon you."

Kent Thornton, Senior Student

"The Modular Scheduling Project has its positive and negative points. I am inclined to believe that a studious student will accomplish and receive more from this schedule than a care-free person. The success of this plan depends upon the student. He can use his independent time to further his knowledge in classes by studying or he can goof around and fall behind - - in fact, much farther behind than in the normal scheduling plan. I believe this plan makes us ready for college and the outside world."

Linda Mattson, Senior Student

"I am not in favor of the modular schedule, although it has some good points. I feel that the idea of having high school students working on their own is good in theory but that perhaps it is a bit naive to put this much into the hands of the student. Many students feel as though they <u>have</u> to go to high school; whereas students who <u>want</u> education go to college. Therefore, a similar plan is successful on this level.

"I feel that we are not getting as much out of school as we were when you <u>had</u> to go to study and <u>had</u> to have an assignment in. Personally, I do not study nearly so hard nor get nearly as much and I don't believe many of my friends opinions differ very far from my own."

Andrea Burns Senior Student

"I feel that the modular scheduling has potentials of being very good; but I feel that students are wasting some of their independent time. Since we have been on this new plan my grades have lowered because I have too much independent time. I prefer to have my time full of classes. I feel that I would rather wait to have this free time in college and have more classes. It also divides the time in the classes; some classes are too long and some are too short. I really prefer the other type of scheduling."

Cheryl Thornton, Junior Student

"I feel that Modular Scheduling is good if you are willing to take advantage of it. Some of the students take advantage of their independent time for study but too many of us don't. There is less boredom of school because we do not have the same classes every day."

Mildred Flanders, Junior Student

"I feel Modular Scheduling is good because with this schedule we have different classes each day for varying amounts of time in contrast to the same routine each day. Also, we are allowed enough independent study time to get our lessons at least partially completed, do research, etc."

Robert Allan, Junior Student

"I like the way our schedule is set up this year so that we have time to study after our classes while something is fresh on out minds. I like it better than going to the same classes every day at the same time - - which can get boring. There is more time to study if you use it."

Kelby Hughes, Junior Student

"I think Modular Scheduling is much better than the other method. It gives you more time during school hours to get your lessons where you can get help when it is needed. Only one thing I don't like and that is that the teacher doesn't call the students in who need extra help."

Dan Reber, Junior Student

"I like the Modular Schedule in many ways. I think it puts the student more on his own; he has a choice to go ahead and do a good job or he can sit back and do very little. We have long study periods and then short ones where we discuss the material we have studied. It has helped me a lot."

Response from Teachers:

Kelton L. Chamberlain, Ind. Arts & Driver Education

"I like the modular schedule because it allows for flexibility. It makes it possible to have a longer scheduled period for Industrial Arts courses. It

also allows me some time when I can schedule behind-the-wheel instruction with students who are enrolled in Driver Education classes.

"The main disadvantage of this system that I have noticed is that students sometimes sign up for very few subjects and have quite a bit of unscheduled time which they cannot (or will not) use wisely."

Taft Watts, Mathematics & Football Coach

"1. Encourages independent learning and discipline among students.

2. Allows teacher to give more and better individual instruction."

Harold E. Wittwer, Social Science & Athletics

"Modular scheduling certainly has its merit. As a matter of fact, if it is properly limited it appears to be an answer to one of our problems. Our traditional scheduling is arbitrary, forcing the teacher to design his curriculum to fit it, and Modular Scheduling can be adjusted or designed by the teacher to fit his curriculum.

"It is also easier for the student to do some adjusting. Students find that they can take a greater variety of courses than under the traditional schedule. This (if not properly limited) could be bad as well as good. If students are allowed to take any and all the classes they wish they will not be getting the best education possible. We have students carrying as many as eight and more units of credit and I wouldn't be surprised that many of these same students may be failing or near failing many of them.

"The part of our project that I feel needs to be questioned is the independent time given to students. I can certainly understand the philosophy behind it. Students may learn better doing what they like to do, but what about the feeling of security that goes with being told what you can or cannot do? What about discipline? Is it important? I feel that all students must learn discipline and, if possible, self-discipline; but, if not, they must learn to accept it externally.

"We say that our project is preparing students for college, but is it? In order to be a success in college a student must learn self-discipline. I submit that students will have a more difficult time with self-discipline if they haven't had to learn to accept external discipline. We can teach discipline by keeping students under constant supervision who have not mastered the art of self-discipline. Independent time should be given only to students who can prove their ability to use it.

"I have found that within the last fifty years there have been many projects similar to ours in other schools; many of which (I might add) have been discontinued. I wonder how closely we have studied the results of these before we made our attempt. 'We reserve the right to be wrong'; but how wrong can we excuse ourselves for being. This is American Youth we are experimenting with.

"We have found, also, that special, and often regular, activities are difficult to schedule with the modular system. Maybe even the physical problems created by the system outweighs its advantages.

"To sum up, I feel there is merit in our project, but we need to do some close evaluating and determine whether we are moving too fast."

Fred M. Evans, Spanish and Commercial

"Individual work has been on the up-rise for the students in the departments where I have observed. Those who do not study under the modular system are those who interrupt others in the library or wherever they are required to study. Those who wish to work in small groups are finding convenient places to work. A small group of four or five were discussing mathematics today and I found that they were discussing the solution in their own terms.

"The modular system works for those who take typing only where the number of hours are limited for each student. We found students are taking typing but were not able to dedicate four hours a week to the required assignments. For those who planned carefully, in their four hours of typing have successfully and systematically shown improvement.

"Extra curricula have been indicated to be the problem in having the class together for all classwork at the indicated time; but as for the blame to this, I feel that the regular school system had the same kind of problem. I see more conscientious work being applied than before. I find students using their time more wisely now. I feel that the student who is not working and applying himself now will not apply himself under other kinds of systems."

Michael J. Clarke, Art and Yearbook

"I believe the new experimental program of Modular Scheduling we are now working under for the second year is proving to be one of the most exciting challenges in the educational field - - basically, for the following reasons:

1. It gives greater flexibility to the student-teacher work day.

2. It provides a greater challenge to the student, places new responsibility on him and permits the individual to grow at his own rate of speed, providing greater challenge for him as an individual.

3. In my field (the Art area), it has provided a closer student-teacher relationship and permits me to individualize my classes. I find the students are responding with a greater degree of enthusiasm and the work quality has increased. The poor student is doing no less; but the exceptional art student is progressing to a greater degree and having a greater number of successful experiences than before.

"There are other reasons: but to me these three express my whole-hearted support of this new Flexible Scheduling and I feel it is one of the basic answers to the educational need which we have to face and answer for our students of tomorrow."

Esther Barrett, Typing and Girls' P.E.

"Modular scheduling is particularly excellent for students taking skill subjects like typing and physical education because it gives the students an opportunity to develop at their own rate of speed. This is a decided advantage for both slower developing students and accelerated groups. Examples of advantages in our school are:

"Student A, 14, ninth grade this year, is very definitely a superior student. He is a very quick learner and has a good retention. He is also quite adept in muscular activity, although his coordination needs developing. He is very competitive in a negative sort of way - - he wants to be first in his group, but he won't do more than anyone else. He has been unfortunate enough to be in a group of slow learning boys, and had to be pushed to do any more than the slower ones. Under the modular schedule, he takes typing with older students one day a week; the other three hours are independent study times. He competes only with himself and the teacher is able to motivate him to real achievement.

"Student B is in the same grade as Student A, but his problem is different. He is a very slow learner, but a very hard worker. He responds gratefully to praise and encouragement. His attitude is very good, but his coordination in beginning typing was so bad that if he had been required to keep up with a regular class he could not have done so. He was put on an electric typewriter to give him assistance with his stroking problems and given special assignments geared to help him. He has put in extra hours almost every day and is becoming quite a good typist. He also competes only with himself. At the end of the first six weeks he could type only twelve words; at the end of twelve weeks he was typing twenty-three words. He still has coordination trouble and makes frequent errors, but he has not become discouraged and "quit" as he probably would have done in a regular class. His trememdous effort and extra work earned him an "A" at the end of the second term.

"Average students do as well on this schedule as the regular schedule. I believe the big advantage in skill work is for the advanced and slower students.

"Although physical education classes are held on a regular basis, I have found the modular schedule has made is possible for special help for particular students. I have been able to start girls' gymnastic classes and organize a tap dancing group. I use older, experienced students who are willing to use their independent study time to help with these student groups. The tap dancing group consists of eight junior high girls under the direction of a senior, married student. I organize, direct and act as resource person in getting records, material and other helps; but the girls, themselves, each have a responsible job and are able to practice and meet without teacher direction.

"Bookkeeping has been taught only one hour a week in regular class session. For the students who are willing to spend the extra time needed each week, the class is successful and they are doing excellent work. However, several students (there are only 7 enrolled for the class) need the incentive of daily assignments to keep them working. Although they have plenty of time and opportunity, three of the seven students are not learning bookkeeping as well as they would if they were in a regular class. The other four students are doing well without daily classes. They have been able to take a class that would not have been offered under the regular schedule."

L. D. Lee. English, Business and Counselling

Advantages applicable to my classes:

1. Class time is flexible to the point where:

   A. Individualization is facilitated: The slower group was actually divided from the faster group and two classes established.

   B. Utilization of available time is carefully developed.

   C. Actual class time is supplemented as much as on a 4-to-1 basis with student's independent time.

   D. Instruction is more goal-centered.

2. Daily variation throughout the week, with the variation occurring not only in the time which the class meets but also in the length of class time, which effectively combats the dreaded routine which makes a conventional schedule so unpleasant.

Suggestions:

1. Students should be permitted to register for not more than 7 classes per semester.

2. Emphasis should be shifted from QUANTITY to QUALITY.

LaBerta W. Bowler, Substitute Teacher

"Modular scheduling, in my opinion, is one of the long steps forward in curriculum planning. It is the most effective way I have seen in operation for letting a student go his own speed. It not only broadens the scope of classes a bright student may take but it helps all students acquire better control over the use of their time."

Bernard L. Prows, Science & Assistant Principal

"I believe our experimental project in flexible scheduling has, in the main, been very successful. Our program has a high degree of adaptability and the students seem to be developing a keener sense of individual initiative and personal responsibility.

"The project has not been without its difficulties, however. As I see it, our problems have been mostly related to the following:

1. Allowing the more able students to register for too many classes. This leaves the student with insufficient study time.

2. Inadequate resource and independent study facilities. (This situation has now been mostly corrected.)

3. Lack of student individual initiative and wise use of independent study time (much improved over last year).

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The concluding illustration, titled "Stanford University School of Education Scheduling Questionnaire", is a complete report of the first year of operation on Flexible Scheduling at Virgin Valley High School.

STANFORD UNIVERSITY
SCHOOL OF EDUCATION

Scheduling Questionnaire

Principal Blaine W. Allan Name of School Virgin Valley

School Enrollment 154 Grade Levels 7 - 12 Number of Modules/day 16

STAFFING

	Full Time Equivalents
1. Administrators	One and one half
2. Teachers	Twelve
3. Counselors	One half
4. Paraprofessionals	One librarian, one Special Ed. teac.
5. Others	One secretary - one teacher aid

INSTRUCTION

	Total Numbers	Average Section Size	Percentage of School Day
COURSES	30		
SECTIONS	75		
LG. GROUP SECTIONS	7	67	20
MED. GROUP SECTIONS	31	25	27
* LABORATORY SECTIONS	16		13
SM. GROUP SECTIONS	21	8.7	20
INDEPENDENT STUDY			20

* Include SCIENCE, HE, IA, PE, ART, and MUSIC.

ype of schedule presently being used (circle one):

CONVENTIONAL TRANSITIONAL (FLEXIBLE)

entative plans for type of schedule to be used next year: Flexible

re you using the open laboratory concept? Yes
(Where students are assigned tasks to complete, but may select the time in which to go to the laboratory to complete them.)

lease list resource centers and number of instructional stations:

1 _____(15) 2 _____( ) 3 _____( ) 4 _____( )

5 _____( ) 6 _____( )

lease list other individual or general study areas:

1 Science (6) 2 Home Ec. (2) 3 Art (4) 4 Music (2)

5 Vo Ag (8) 6 Library (4)

ercentage of teachers' weekly time in:

1. Class 43.5%
2. Supervising 5 %
3. Preparing 20 %
4. Working with students in I.S. 31.5%

ajor Problems: (Circle those most unexpected or underestimated)

TO ADMINISTRATOR	Amount of Difficulty	Estimated Time To Solve (Hours)
a. Scheduling rooms	5 %	2 - 3
b. (Resolving student conflicts)	75 %	45 - 50
c. Sections assigned manually	10 %	6 - 8
d. Scheduling independent study	5 %	2 - 3
e. Others - Change staff assign.	5 %	2 - 3

2. TO TEACHERS

a.	10 %	2 - 3 hours
b.	85 %	10 - 12 hours
c.	5 %	1 - 2 hours
d.	0	0

3. TO COUNSELORS

a.	100 %	Less than one hour
b.	0 %	none
c.	0 %	none
d.	0 %	none
e.	0 %	none

4. TO STUDENTS

a.	0 %	
b.	80 %	1 - 2 hours
c.	0 %	0
d.	10 %	less than one hour
e.	10 %	less than one hour

General reaction to machine generated conventional or flexible schedule.

1. STAFF

Accepted as a major change forward in scheduling - Concept of adjusting the schedule to the cirriculum and not the cirriculum to a schedule is most important.

2. STUDENTS

With little exception the students favor this type of scheduling. 80 - 85 % of students are using the independent time effectively. Student moral is high. Boredom and monotony is taken from the school day.

3. PARENTS

The parents are slower to adjust to the change. Those parents who are willing to study and learn the facts and the advantages of Modular Scheduling approve it. Those who do not understand are critical. They generally approve and have accepted the new inovation.

Suggestions for optimal time schedule for master schedule construction:

	DATE
1. Final course structures and student requests determined by school.	May 1
2. Keypunching completed and materials sent to Stanford.	June 1
3. Diagnostic materials returned to school for schools to check input.	July 1
4. Generate first master schedule.	Aug. 1
5. Generate final master schedule.	Aug. 20
6. Update master schedules (Course, Room, Teacher, and Student changes) and provide final output to schools.	Sept. 5

Suggestions for improvements in the STANFORD SCHOOL SCHEDULING SYSTEM.
(Please use as many pages as necessary)

1. FEATURES

a. Those presently available:

1) Exclusive Student Sectioning (ESS) No problem

2) Phase Sequencing (PS) No problem

3) Day Independence (DI) ?

4) Room Assignment Program Hand schedule for final output

5) Final Updating Procedures Try scheduling required and solid subject only on first run master schedule. Then during fall registrations students fill in electives for final master schedule.

6) Student Course Priorities Have a suggested cut off figure for number of modules a student can register.

7) Course Alternates List course alternates for course electives only.

8) Schedule at least on semester basis. Perhaps 4 times per school year would be better.

9) _____

_____

b. Those you would like to see added:

1) Print out of student's independent time.

2) Print out of rooms not being used for class instruction.

3) A student number for text books, locker & etc. Assignments.

4)

2. THE INPUT FORMS

a. A simplified form for small schools, which deals with single sections.

3. THE MANUAL

a. Keep it updated.

4. THE OUTPUT

a. Diagnostic No problem

b. Intermediate (output returned to school after initial schedule generation)

No change

c. Final

Prefer the $8\frac{1}{2}$ x 11 size paper. It fits the student binders.

5. UNIVERSITY SCHOOL RELATIONS

We are well pleased with the line of communication. I think this report is worth while and would appreciate a copy from the other schools. By now the schools should be able to document a few of the positive or negative results - student dropouts, grade averages, students continuing on in higher education, vandalism, library book use and etc.

Thank you.

James E. Smith
Research Assistant

JES/dh